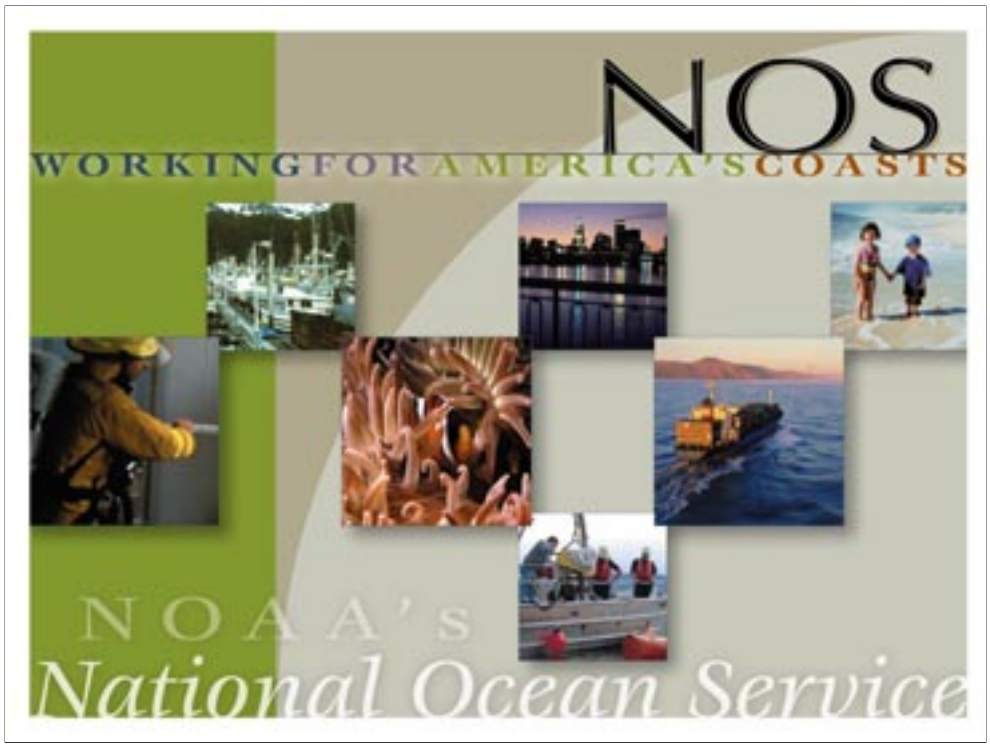
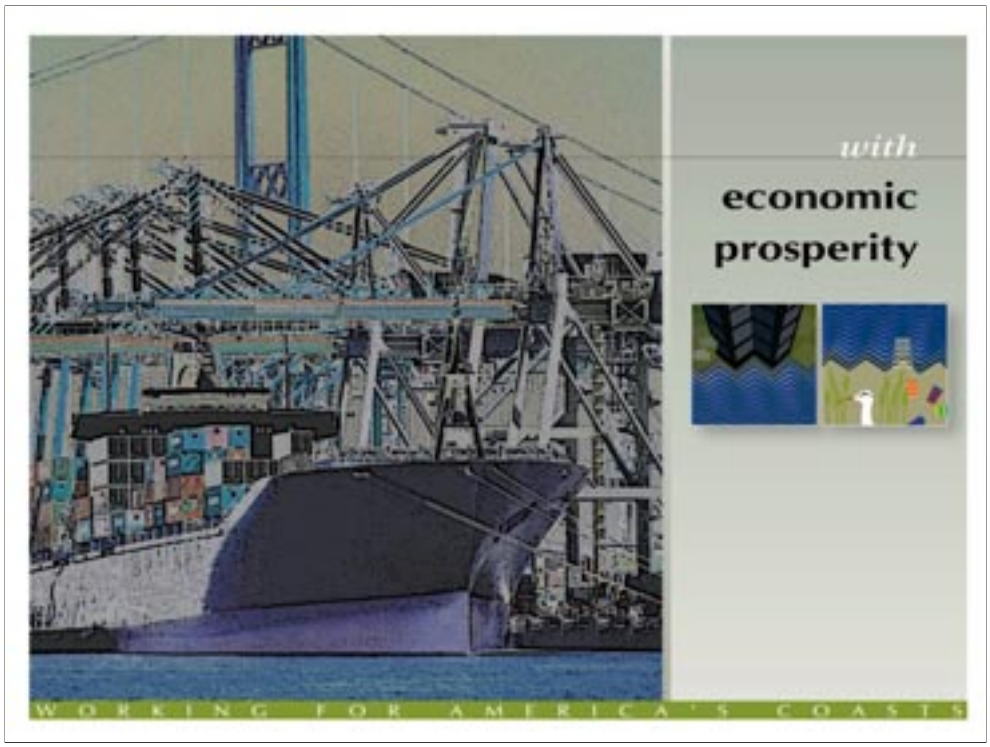

NOS
WORKING FOR AMERICA'S COASTS
NOAA's
National Ocean Service


**The National Ocean Service balances environmental protection . . .**




**. . . with economic prosperity.**

**We are an agency with a great sense of tradition, coupled with a progressive approach to solving the challenges of the 21st century.**


The National Ocean Service focuses on supporting four key goals:

- ***Promote Safe Navigation,*** because accurate and timely navigation services are critical to safety, economic productivity, and environmental protection.
- ***Support Coastal Communities,*** because Americans expect a quality of life that balances economic development with environmental protection.
- ***Sustain Coastal Habitats,*** because healthy habitats are essential to economic and environmental prosperity.
- ***Mitigate Coastal Hazards,*** because communities must reduce their vulnerability and respond immediately when disasters strike.

These goals will guide NOS into the future.


**NOS promotes safe navigation because accurate and timely navigation services are critical to safety, economic productivity, and environmental protection.**


## Promoting Safe Navigation

***The Need***:

**•Accurate and timely navigation services are critical to safety, economic productivity, and environmental protection.**

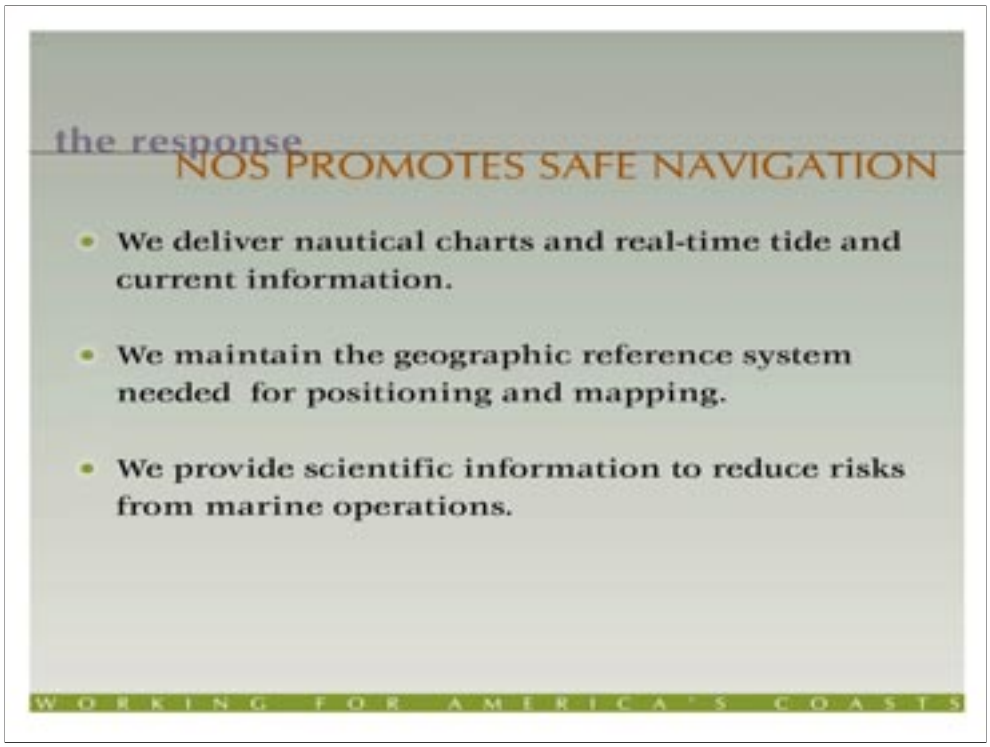
***The Challenge***:

**•Waterborne commerce is a significant economic engine, contributing over $742 billion in revenue and 13 million jobs.**

**•In the last 50 years, ships have doubled in size and waterborne commerce has tripled. It's projected that the total volume of marine trade will double in next 20 years.**

**•Transporting cargo on the high seas has inherent risks -- 3,500 ships (many of which carry hazardous materials) are involved annually in accidents on the Nation's waterways. There are 3 million tons of hazardous material cargo moving on U.S. waters EVERY DAY.**

**•Pollution incidents have real impacts on our coastal resources -- 84% of the volume of oil spilled from 1973-1999 occurred within 3 nautical miles of the U.S. shoreline.**



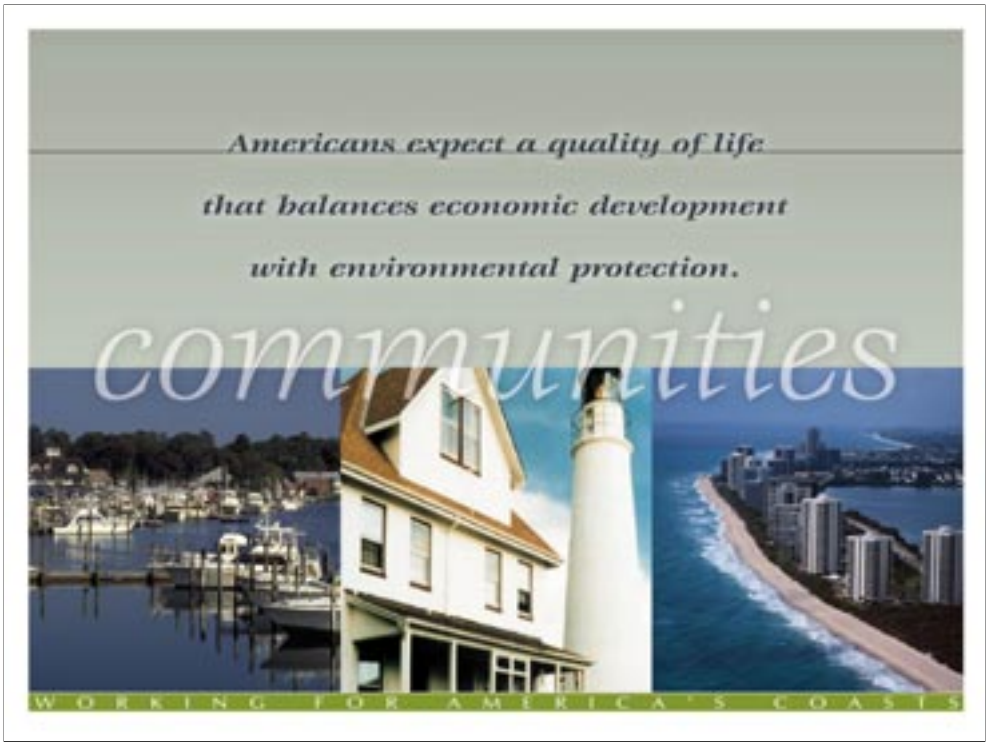

## NOS Promotes Safe Navigation

•We deliver both paper and electronic nautical charts to ensure that mariners have the information they need for safe and efficient marine transportation.

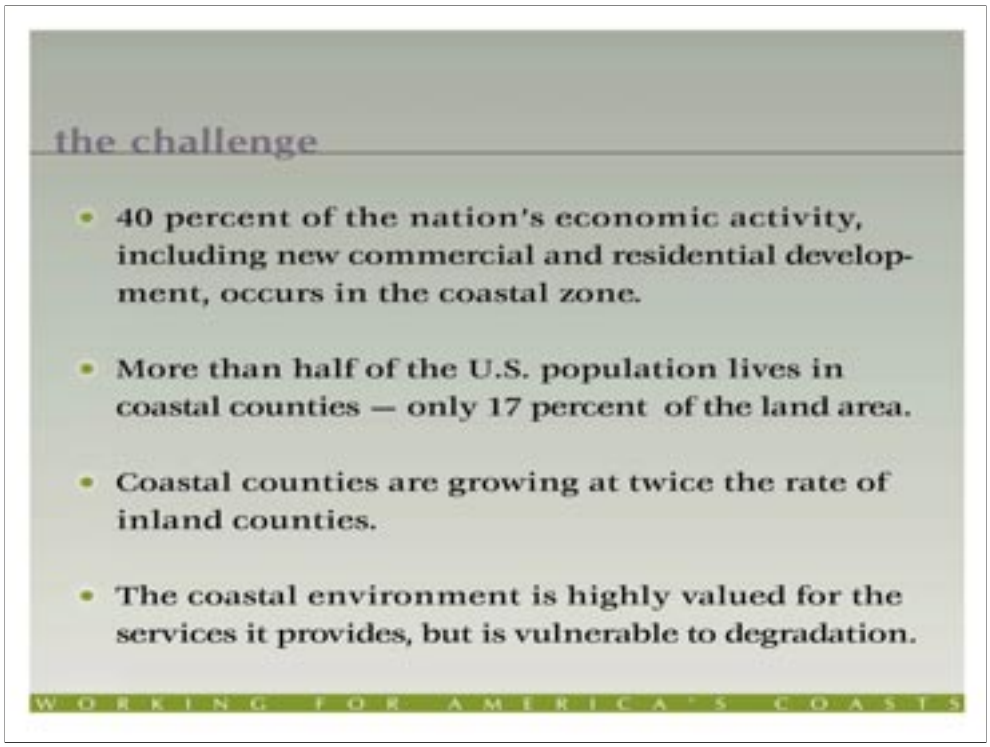
•We provide real-time information on tides and currents used by vessel captains, fishermen, and recreational boaters as they transit America's coastal waters.

•We maintain a national system of geographic reference points and positioning technology to ensure that a variety of users (including aircraft, shipping, and even farmers) know exactly where they are. Geographic Positioning Systems (GPS) and the Internet get real-time, accurate information to the mariner.

•We reduce risks by helping to define traffic lanes for ships and conducting other activities that provide vessel operators with the information they need to avoid accidents.




**NOS supports coastal communities because Americans expect a quality of life that balances economic development with environmental protection.**




## Supporting Coastal Communities

*The Need*:

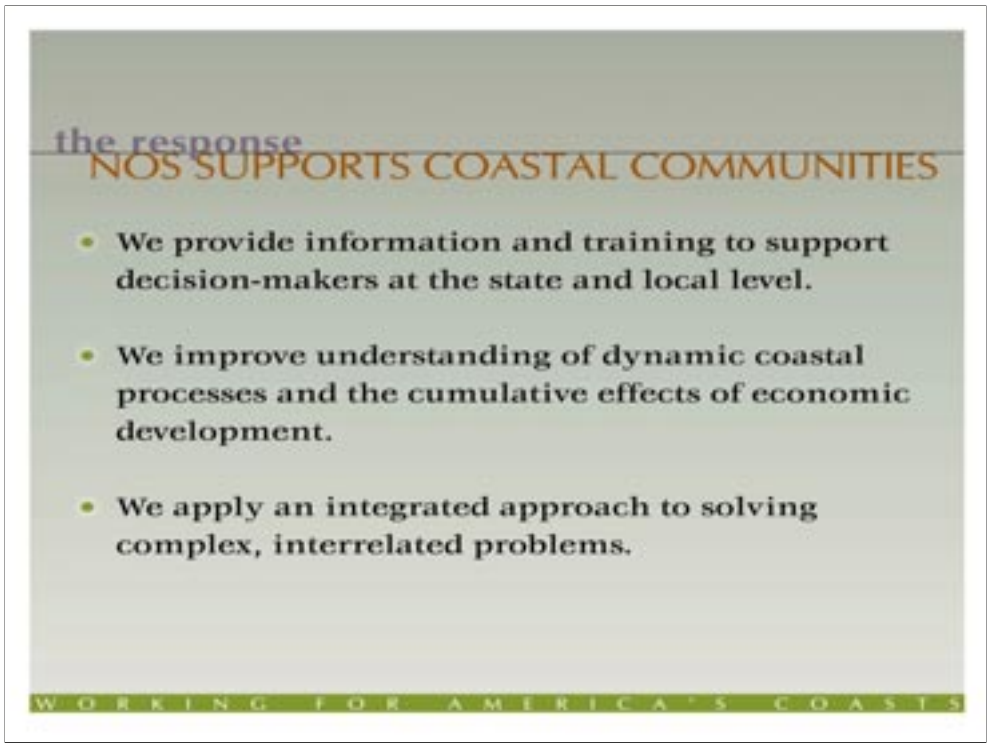
•Americans expect a quality of life that balances economic development with environmental protection.

*The Challenge*:

•Forty percent of the Nation's economic activity (gross domestic product) occurs in the coastal zone and 40% of commercial and residential development starts are in coastal areas.

•A disproportionate number of Americans live on or near the coast with over half of the U.S. population living in coastal counties. The coastal fringe where these people reside represents just 17% of our land area. And the growth shows no signs of abating -- 19 of the 20 most densely populated counties in the United States are coastal, including the burgeoning suburbs of Los Angeles, California and Washington, D.C. Coastal counties are growing at twice the rate of those farther inland.

•The coastal environment is highly valued for the services it provides, including beaches for recreation, habitat for fish and wildlife, and waterfronts that support economic activities. The coast is also highly vulnerable to damage from coastal storms and degradation from polluted runoff.

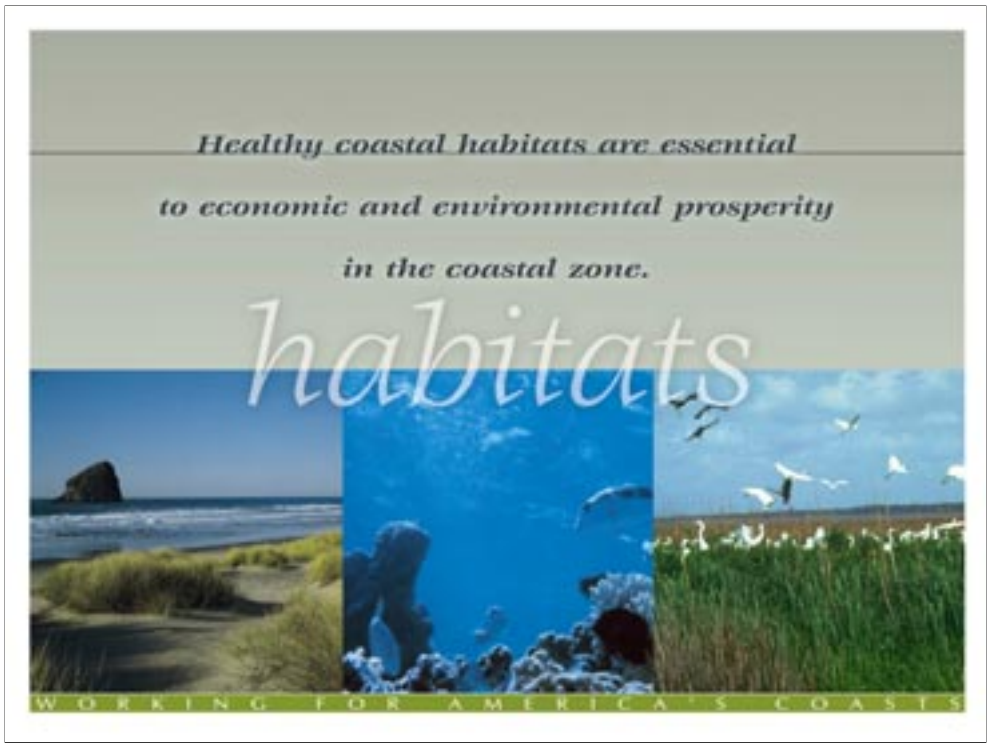



**NOS Supports Coastal Communities**

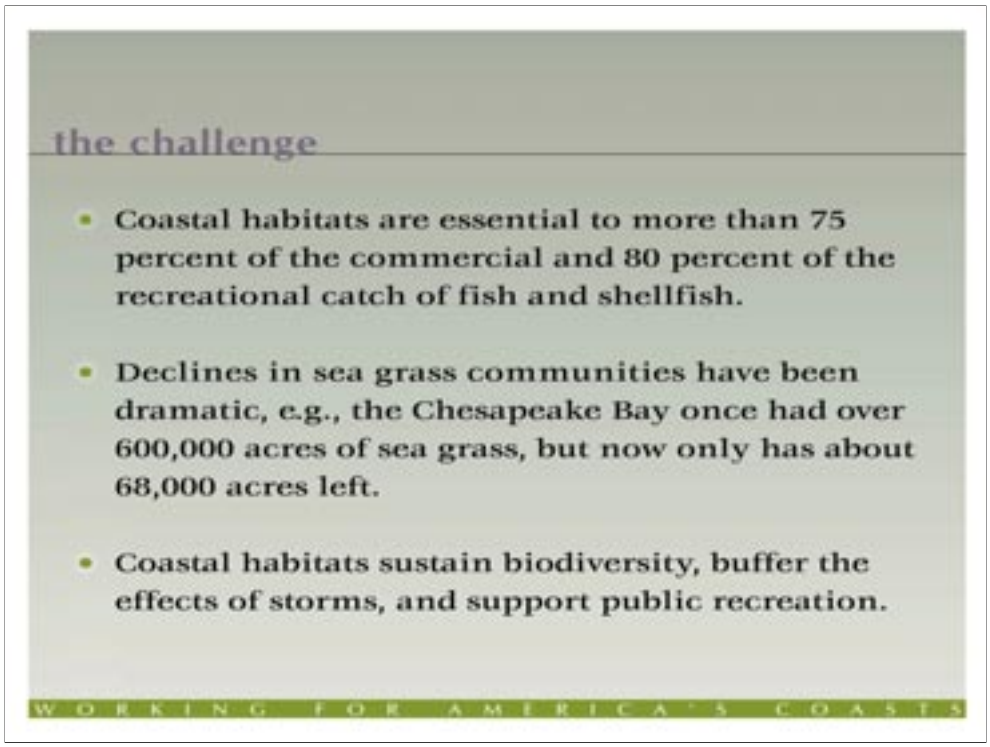
**•We provide information and training that helps state coastal managers and local governments make better decisions about how to manage their resources.**

**•We are continually working to to improve our understanding of the variety of processes that influence the coast, including the cumulative effects of human activities in coastal watersheds.**

**•We apply a variety of tools and capabilities in an integrated fashion, leading to better solutions for complex problems.**



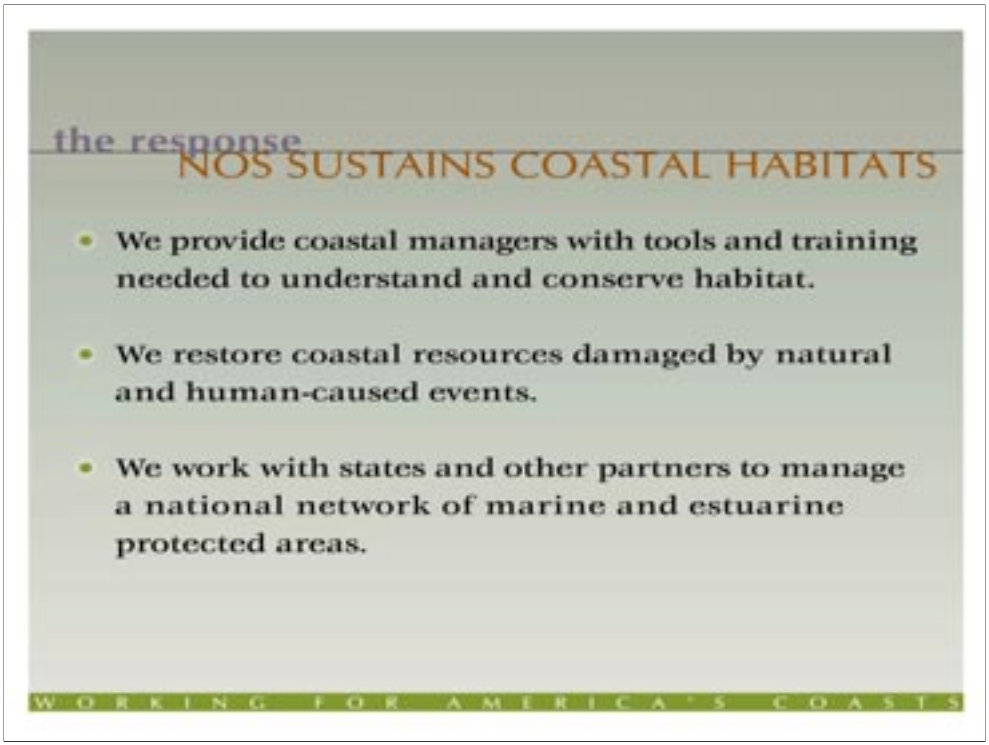

**NOS conserves habitat because healthy coastal habitats are essential to economic and environmental prosperity in the coastal zone.**




## Sustaining Coastal Habitats

***The Need***:
**Healthy coastal habitats are essential to economic and environmental prosperity in the coastal zone.**

***The Challenge***:
**•Coastal habitats are incredibly valuable, providing essential spawning, nursery, and living areas for over 75% of our commercial landings of fish. They're even more critical for our recreational fisheries.**
**•Seagrass creates a special habitat for many aquatic organisms -- these plant communities provide food and shelter for various species of fish, shellfish, invertebrates and waterfowl. But we've seen a dramatic decline in seagrasses, with significant losses in major estuaries like the Chesapeake Bay.**
**•We're also seeing problems in tropical waters, where an estimated 10% of our coral reefs have already been lost. An additional 60% are threatened by bleaching, disease, and a variety of human activities, including shoreline development, polluted run off, ship groundings, and over harvesting.**
**•Coastal habitats provide a variety of services that are critical to sustaining healthy coastal economies, including public recreation and fisheries.**



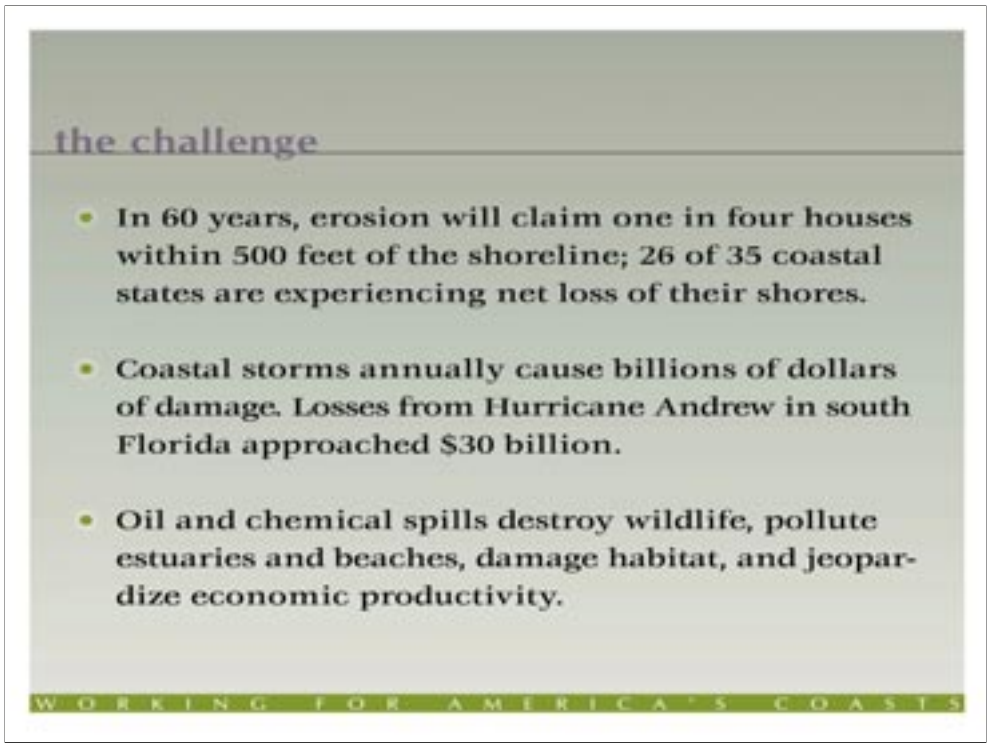

**NOS Sustains Coastal Habitats**

**•We provide coastal managers with the tools they need -- remote sensing images from satellites, habitat characterization, and successful management approaches -- to better understand and conserve habitat. Training and technical support further improve state and local capacity.**

**•We work with a variety of partners to restore coastal resources damaged by natural and human-caused events, including clean up of oil spills and reclamation of hazardous waste sites.**

**•We manage a network of marine protected areas, including national marine sanctuaries, and work with states to manage a system of national estuarine research reserves. These special places, closely connected to coastal communities, are good locations for research on coastal habitats, and education about better ways to protect and restore marine and coastal environments.**


**NOS mitigates coastal hazards because communities must reduce their vulnerability to hazards and immediately respond when disaster strikes.**




## Mitigating Coastal Hazards

***The Need***:

**•Communities must reduce their vulnerability to hazards and immediately respond when disasters strike.**

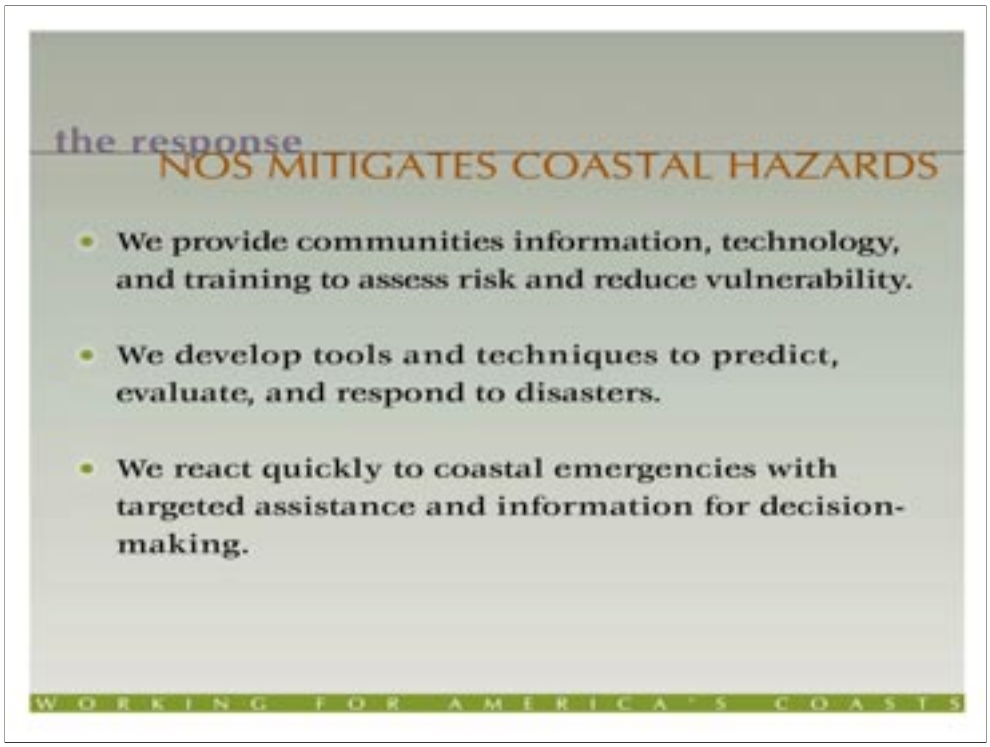
***The Challenge***:

**•Coastal storms annually cause billions of dollars of damage. Losses from Andrew in south Florida, for example approached $30 billion, and would have been far higher had the storm hit Miami, just a few miles to the north.**

**•Violent weather cost the world a record $89 billion during 1998, more than lost from weather disasters in all of the 1980s.**

**•Oil and chemical spills destroy wildlife, pollute estuaries and beaches, damage habitat, and jeopardize economic productivity.**

**•Hazard mitigation strategies are required to reduce threats to people and property at risk and provide for immediate response and restoration of impacted resources.**




## NOS Mitigates Coastal Hazards

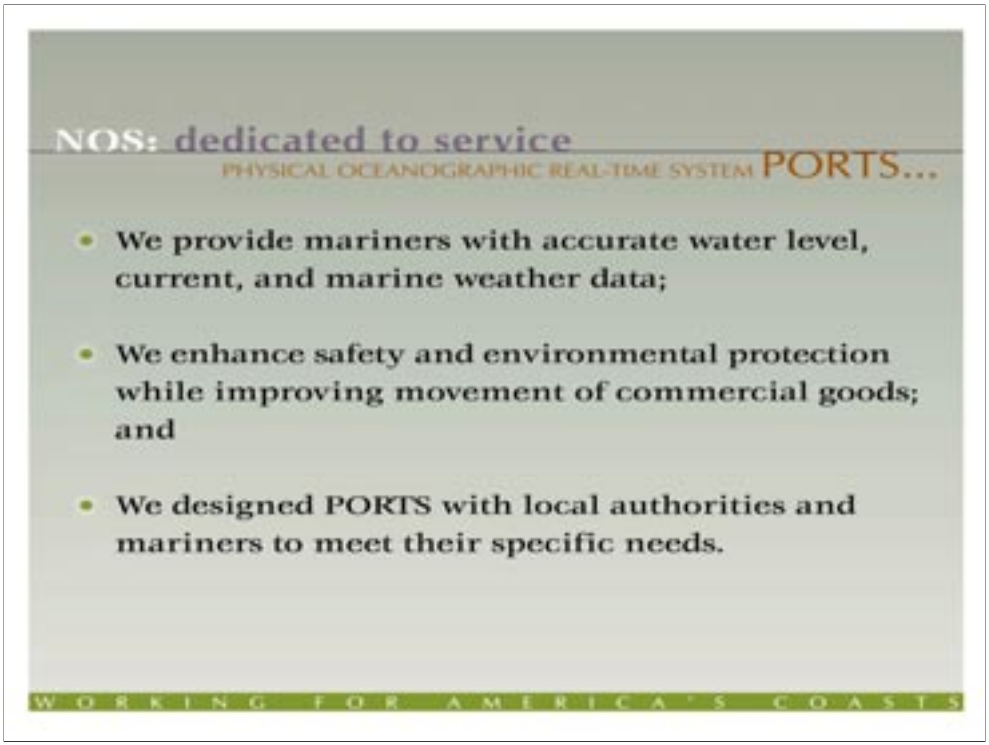
**•We provide coastal communities with the information, technology, and training they need to assess risk and reduce vulnerability.**

**•We work with a variety of Federal, state and local partners (including our sister agency, the National Weather Service) to develop tools and techniques for predicting, evaluating and responding to disasters.**

**•We react quickly to coastal emergencies with targeted assistance to resource managers and disaster response agencies, providing assessments of damage and support in making decisions about the best course of action.**


The National Ocean Service operates in accordance with several key principles:

- ***Service*** to clients is the core responsibility—it must be timely, responsive, and helpful.
- ***Partnerships*** help solve problems by sharing responsibility and increasing available assets.
- ***Science*** underpins the credibility of information used for real-world decision making.
- Timely and effective ***action*** makes a critical difference in people's lives.



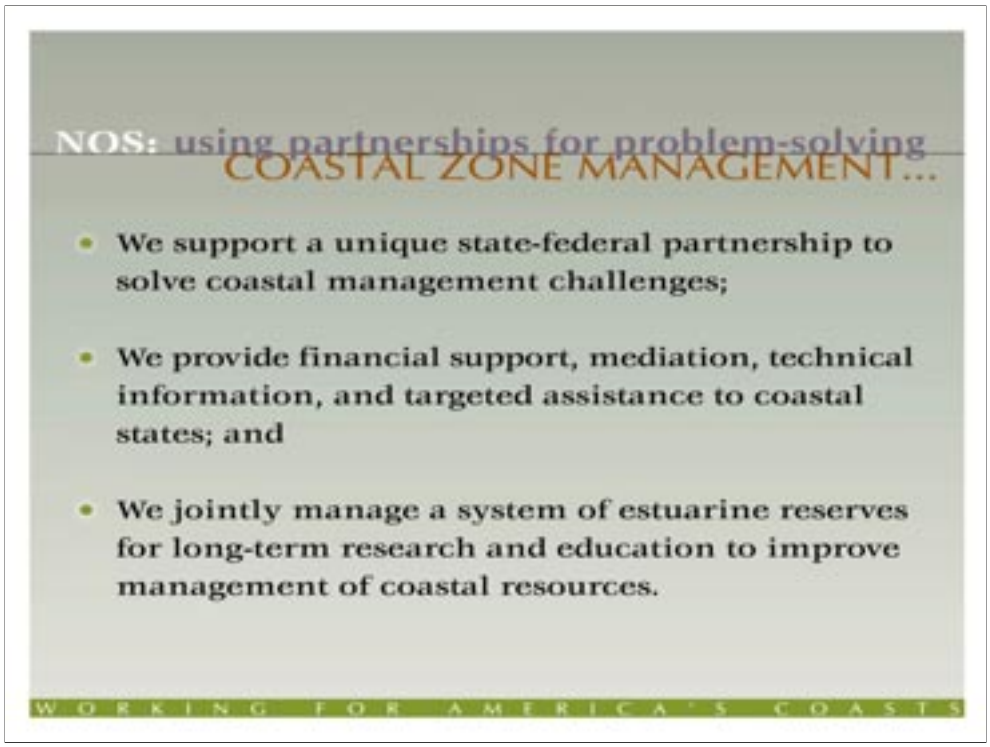

**NOS service is driven by issues and the need for regional and local delivery, converting targeted investments into broad public benefits.**

**•NOS Physical Oceanographic Real Time System (PORTS) provides mariners with accurate, up-to-date water level, current, and other marine and weather data in readily accessible formats.**

**•PORTS enhances safety and environmental protection while improving the efficient and timely movement of commercial goods. NOS works with local authorities and mariners to design systems that meet particular local needs, while ensuring the system meets national criteria and standards.**

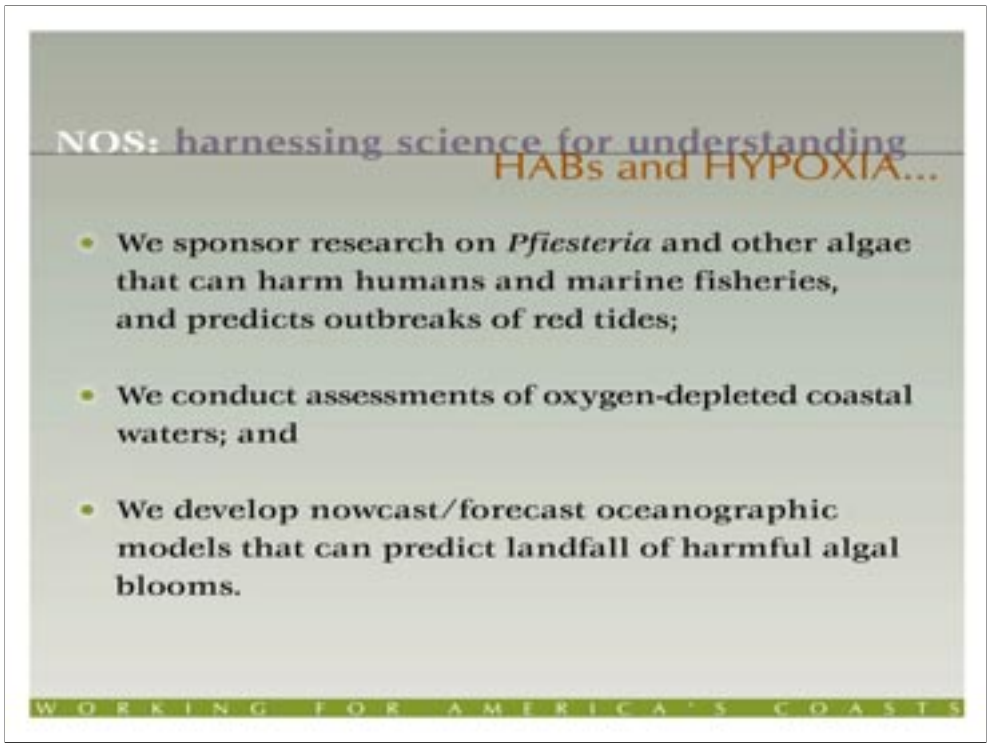
**•While each system is locally operated and maintained, NOS provides continuous quality control for each PORTS installation.**

**•NOS is digitizing historical shoreline topography maps for use in a GIS that will help establish setback lines and determine erosion rates.**




NOS partners with local, state and federal governments, the private sector, academia, and non-governmental organizations.

- For example, the Coastal Zone Management Act establishes a unique state-federal partnership to solve coastal management challenges.
- NOS provides 34 states and territories with financial support ($59 million in FY 2000), mediation, technical information, and targeted assistance on priority regional, state, and local issues.
- NOS works in partnership with states to manage a system of 25 national estuarine research reserves that help advance our understanding of estuaries and human impacts, and educate students and adults about protecting coastal resources.

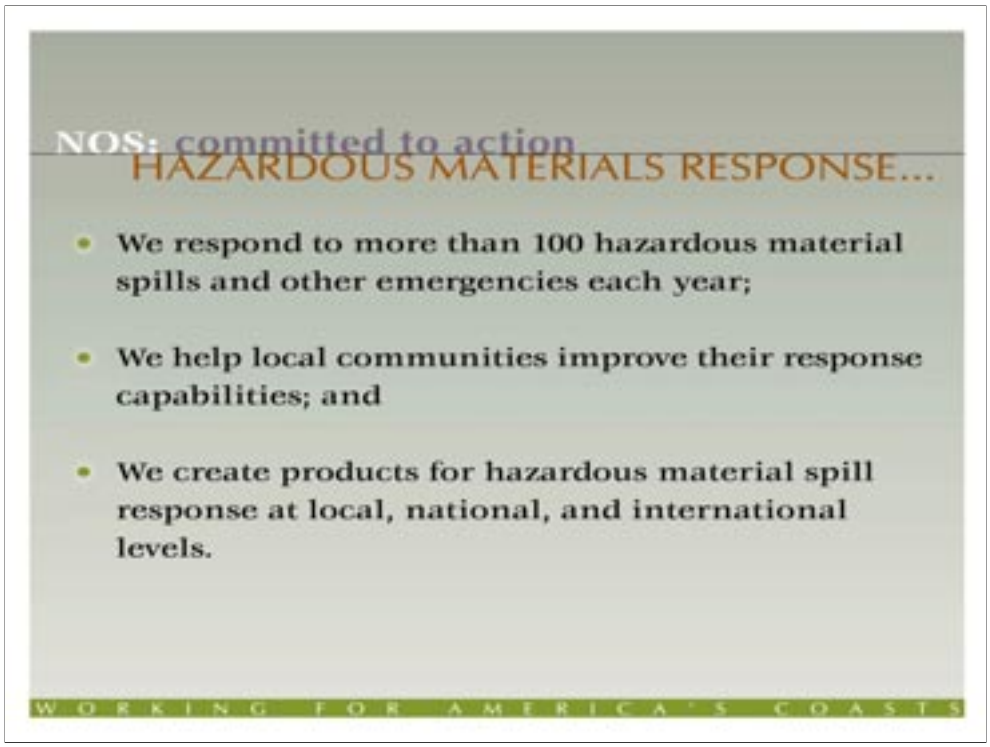



**NOS science works to advance our understanding of coastal environments and reveals new techniques for achieving economic and environmental sustainability.**

**•NOS sponsors research on harmful blooms of algae, such as the outbreak of *Pfiesteria* in the Chesapeake Bay and coastal waters of North Carolina and predicts the outbreak and landfall of other forms of algae, such as red tide. NOS also supports monitoring for algae that can harm humans and marine fisheries.**

**•NOS has worked extensively in the Gulf of Mexico to assess the causes and extent of the "dead zone," an area of oxygen-depleted coastal waters that forms in the middle of the most important commercial and recreational fisheries in the coterminous United States.**

**•NOS has developed nowcast/forecast oceanographic model systems for the Chesapeake Bay, New York Harbor, Galveston Bay, and the entire East Coast of the U.S., which use real-time data and weather model forecasts, and provide accurate predictions of currents.**

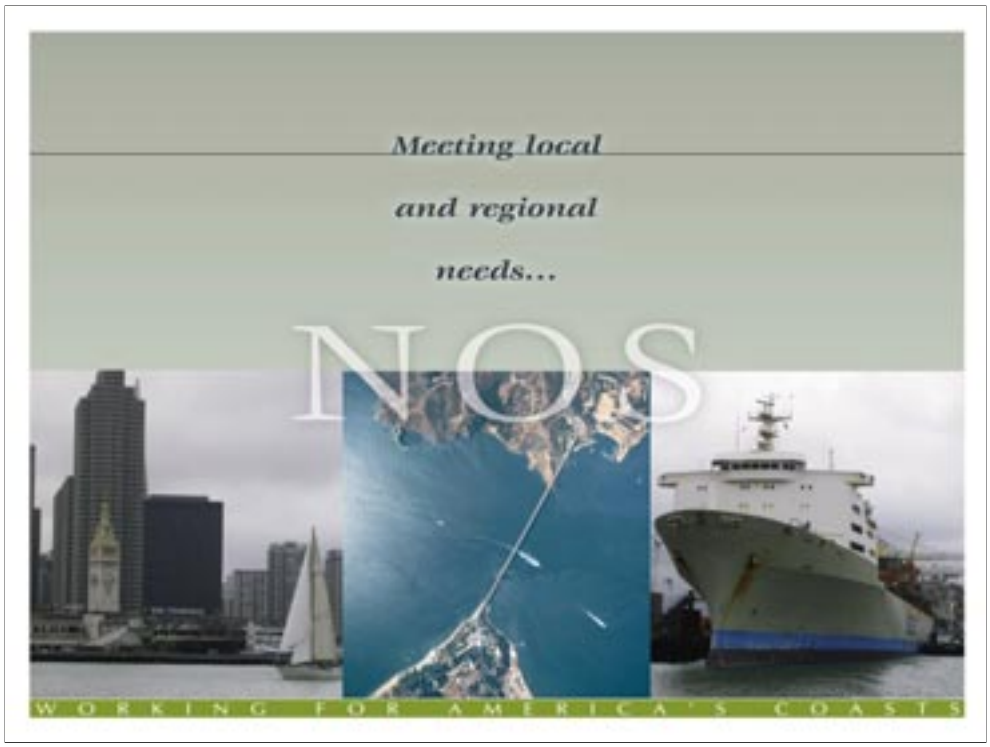



**NOS responds immediately to natural and man-made crises that threaten coastal communities and resources, providing information, technologies, and assessments to support real-time decision making for response actions.**

**•NOS provides timely scientific advice to responders--helping set the stage for mitigation and restoration during the response.**

**•NOS also increases preparedness through drills, developing spill response standards and training to improve the efficiency and effectiveness of response operations.**

**•NOS researches and develops new technologies that enhance rapid decision-making. These activities are carried out in close cooperation with other government agencies and the private sector.**




**Our goals and principles provide the cornerstone for all NOS activities.**

***Promoting safe navigation . . .***

***Supporting coastal communities . . .***

***Sustaining coastal habitats . . .***

***Mitigating coastal hazards . . .***

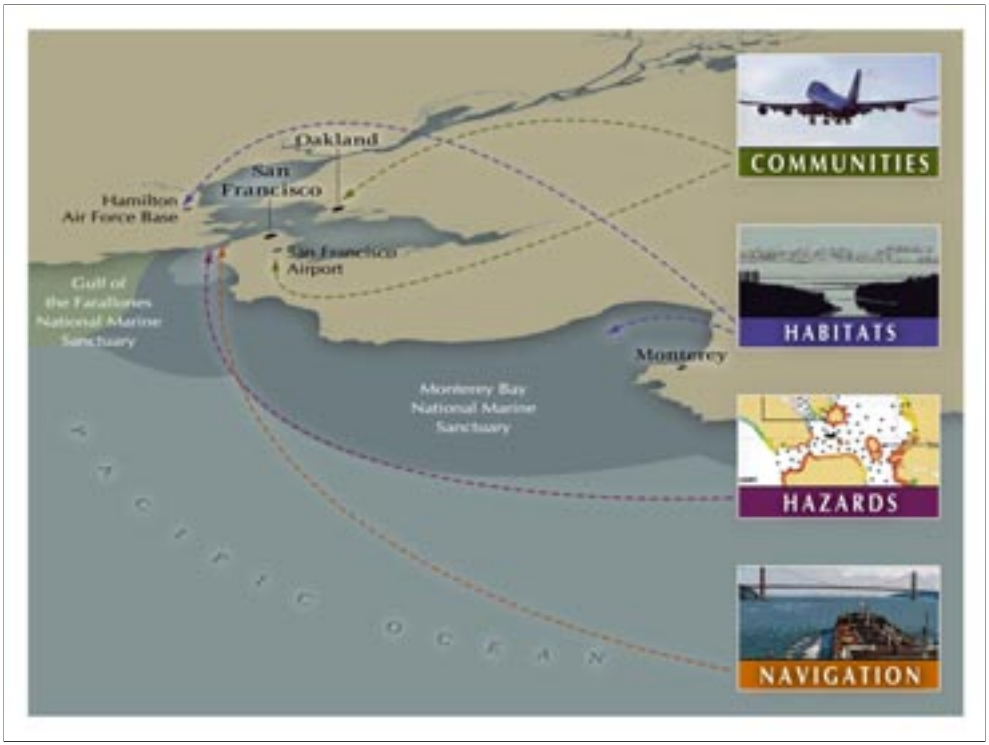
**Through:**

***Service***

***Partnership***

***Science***

***Action***

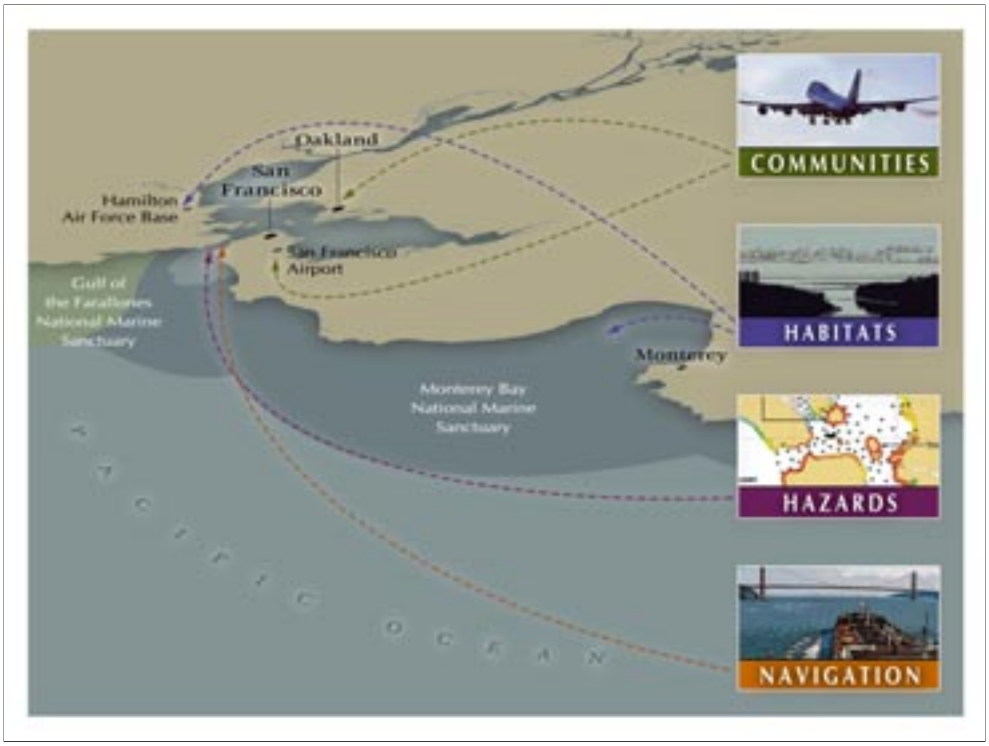



**This map shows examples of NOS activities in the San Francisco Bay area that support coastal communities, sustain and protect habitats, address coastal hazards and promote safe navigation.**

## Supporting Coastal Communities

**To address increasing air traffic congestion, San Francisco International Airport plans to build new runways out into the Bay. The proposed runways would constitute one of the largest single fills ever of the Bay. NOAA was asked by the Bay's federal and state regulatory agencies to form an impartial, independent science panel to identify key questions that must be addressed within the permitting process. Results from the panels allowed the agencies to provide much better guidance to the airport on the scientific and technical studies that should be conducted as part of the environmental review process.**

- **At the invitation of local partners, NOS facilitated an independent panel to identify potential construction impacts.**
- **The process provided information, helped improve the quality of the studies and increased public confidence.**

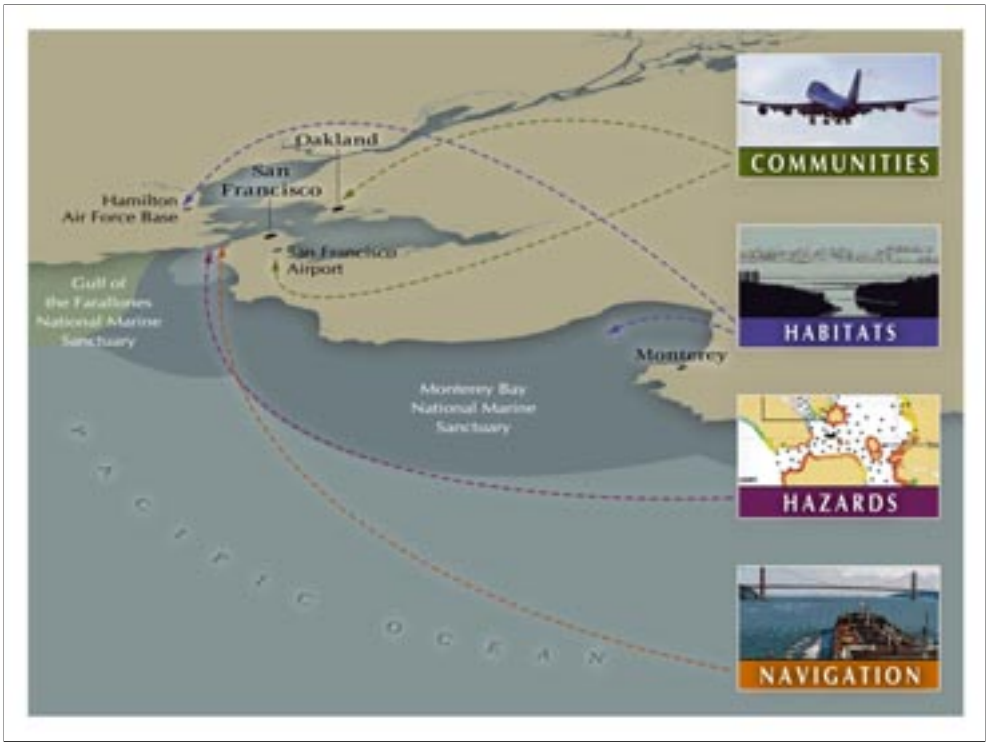



Part 2/This map shows examples of NOS activities in the San Francisco Bay area that support coastal communities, sustain and protect habitats, address coastal hazards and promote safe navigation.

Balancing Navigational Needs and Healthy Habitats

Monterey Bay is one of NOAA's best known National Marine Sanctuaries. Managing the 5,322 square miles of ocean within the boundaries of this sanctuary requires balancing competing demands for protection, maritime transport, fishing, and recreation. NOS worked closely with the maritime community in San Francisco Bay and Los Angeles to design recommended vessel traffic routes that protect natural resources and accommodate the needs of mariners approaching and departing San Francisco Bay.

- National marine sanctuary management requires balancing demands for resource use.
- Vessel traffic between Los Angeles and San Francisco transits the Sanctuary, potentially threatening Sanctuary resources.
- NOS staff designed solutions for vessel traffic that meets the needs of industry while also protecting sanctuary resources.

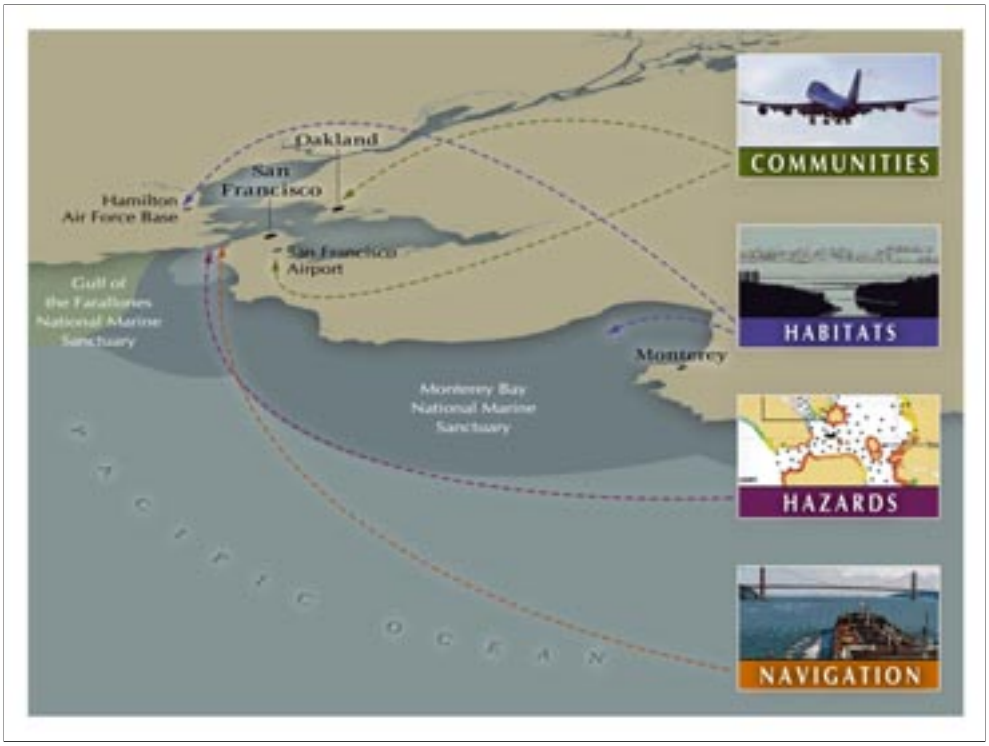



Part 3/This map shows examples of NOS activities in the San Francisco Bay area that support coastal communities, sustain and protect habitats, address coastal hazards and promote safe navigation.

Sustaining Coastal Habitats

The closure of military installations provides opportunities to improve coastal habitat and address other coastal development issues. Restoring wetlands at Hamilton Army Airfield, a former military base, has become a priority for Bay area regulatory and planning agencies. NOS has been supporting efforts to evaluate the need to cleanup contamination left from military activities at the site and to restore former runway areas to productive wetlands. To support efforts to maximize the potential for beneficial re-use of dredged materials from other areas of the Bay, NOS collected tailored water level, geodetic, and surveying information. NOS also trained local agencies and the private sector in the necessary technologies that could be applied at other sites.

- Closed military installations provide opportunities to improve coastal habitat.
- NOS can evaluate the need to cleanup contamination and recommend options for restoring altered habitats.
- By transferring our technology to local communities, NOS can assure success and improve effectiveness.

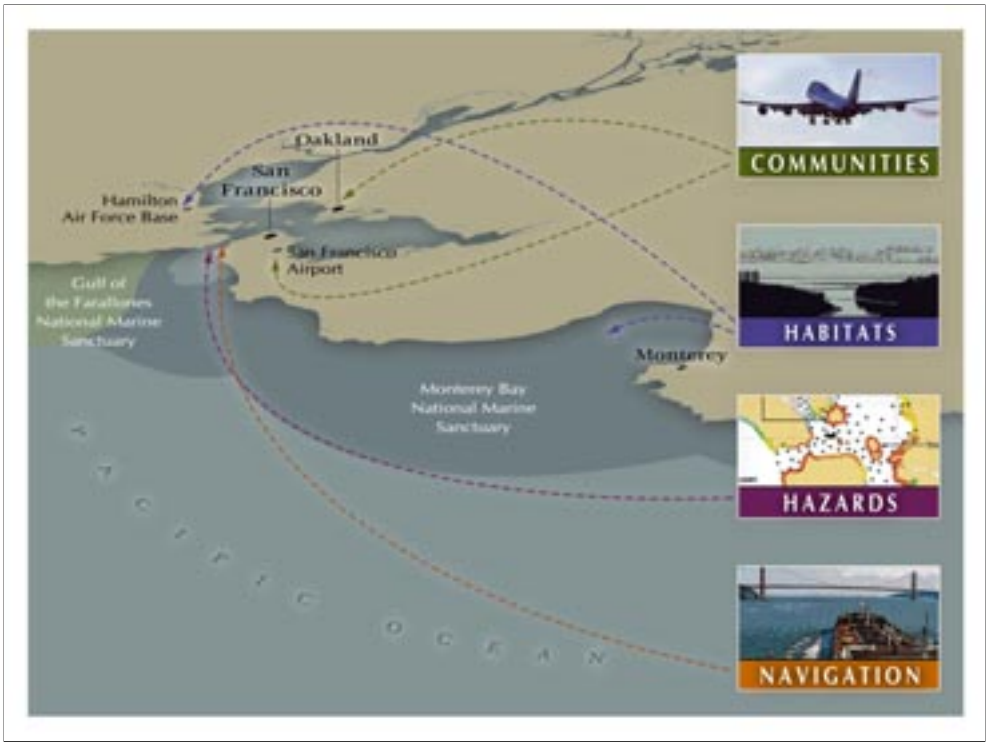



Part 4/This map shows examples of NOS activities in the San Francisco Bay area that support coastal communities, sustain and protect habitats, address coastal hazards and promote safe navigation.

## Mitigating Coastal Hazards

Oil tankers and barges conduct thousands of operations in San Francisco each year, importing oil from Alaska's north slope and moving it up the estuary to refineries in the North Bay. In the event of a spill, preparedness is critical to minimizing harm and expedites restoration. The NOS Trajectory Analysis Planner helps local and regional responders determine how best to deploy equipment under various conditions to maximize response resources and minimize environmental harm.

- San Francisco Bay is a major oil port.
- To help plan for contingencies, NOS developed new tools for the Bay that will make spill response more effective and efficient.

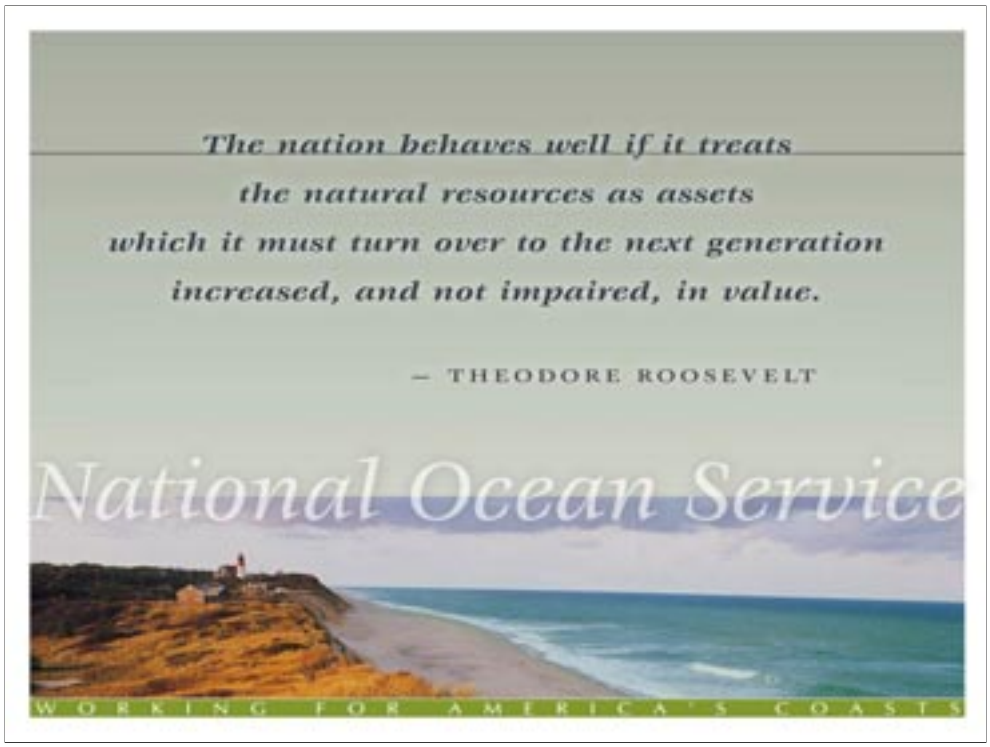



Part 5/This map shows examples of NOS activities in the San Francisco Bay area that support coastal communities, sustain and protect habitats, address coastal hazards and promote safe navigation.

## Promoting Safe Navigation

At the invitation of the Bay's Harbor Safety Committee, NOS developed the San Francisco Physical Oceanographic Real Time System (PORTS). In collaboration with the California Office of Spill Prevention and Response and the Marine Exchange of the San Francisco Bay Region, NOS designed the system around local needs for information to support safe and efficient maritime commerce, oil spill prevention and response requirements, and the need for better information about oceanographic and other physical processes in the Bay. Now integral to navigational activities in San Francisco Bay, PORTS operations and maintenance is funded by the state.

- At the invitation of local partners, NOS developed San Francisco PORTS.
- San Francisco PORTS meets local needs for navigation, spill response, and coastal information.
- San Francisco PORTS is operated and paid for locally.




**The National Ocean Service**

**Working for America's Coasts**